



Central Engineering

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### Hydrite – Terre Haute Air Monitoring Plan

Enclosed is the air monitoring plan for Hydrite's facility located in Terra Haute, Indiana. The objective is to install a new air quality monitoring system for sulfur dioxide ( $\text{SO}_2$ ) and ammonia ( $\text{NH}_3$ ) in and around the

Terra Haute facility made operational April 1, 2016.

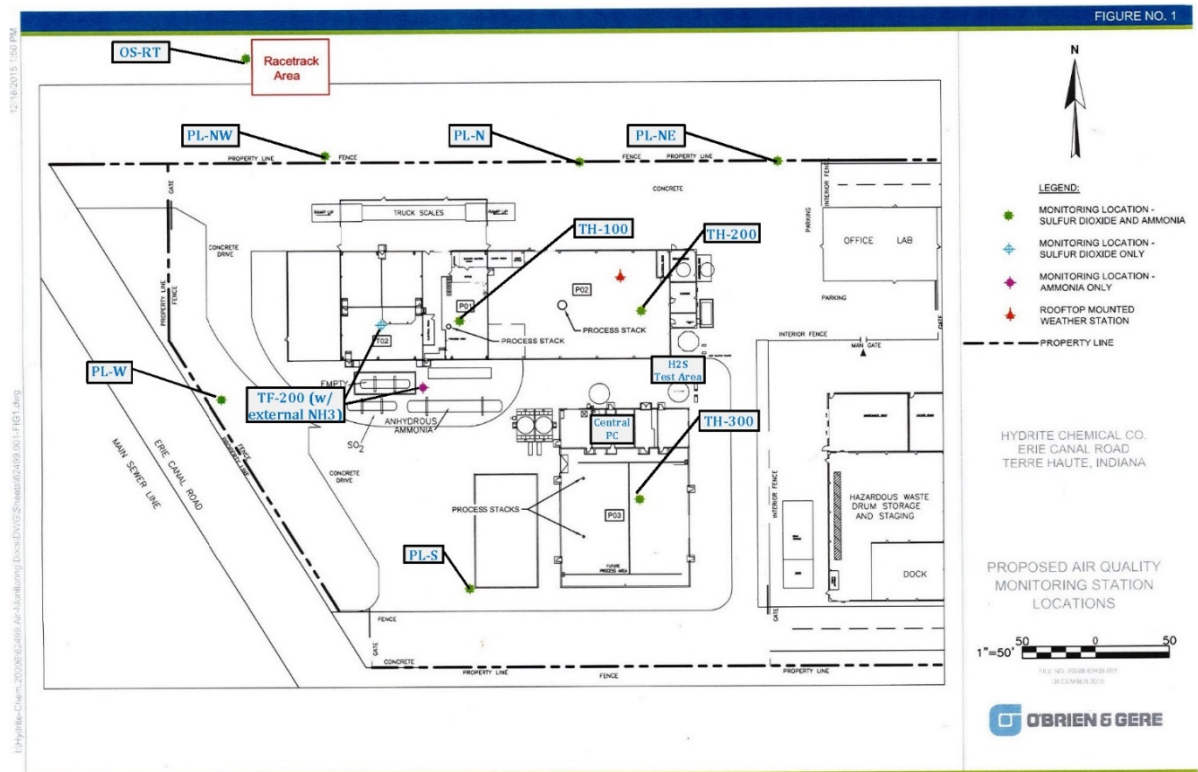
#### ***Monitoring Locations***

The Terre Haute air quality monitoring (AQM) network will measure air concentrations of  $\text{SO}_2$  and  $\text{NH}_3$  in and around the facility at AQM stations in 10 locations as follows:

- Outdoors
  - » Off-site racetrack to the north – 1 station
  - » Hydrite property line facing the racetrack and 4 nearest residential communities – 5 stations
- Inside the Facility or near Facility Emission Sources
  - » In Buildings PO1 and PO2 (B1 process area plus  $\text{NH}_3$  bullet tank outside PO2) – 3 stations
  - » In Building PO3 (B2 process area) – 1 station

The stations layout is presented in Figure 1.

Figure 1. Air Quality Monitoring Station Locations



## Equipment

### Air Monitors

SO<sub>2</sub> and NH<sub>3</sub> will be measured at each station using a Rae Systems MultiRAE Lite real-time monitors. Each SO<sub>2</sub> and NH<sub>3</sub> monitor will be configured to continuously measure real-time concentration 24 hours per day, 7 days per week. Real-time data will be stored as 15-minute time-weighted averages from outdoor stations and 1-hour time-weighted averages from the indoor stations. Each station will be configured with at least two automated alarms for SO<sub>2</sub> and NH<sub>3</sub> – one at the action level and one at the lower control level. Alarms will automatically trigger notifications at a computer located in the Facility Control Room in PO3, and will also send text message alarms to other specified personnel. The system will also include a Racetrack AQM station to include a stoplight-type lighted alarm system with signals as follows if we choose to activate it:

- **Green Light** – SO<sub>2</sub> and NH<sub>3</sub> levels normal
- **Yellow Light** – SO<sub>2</sub> or NH<sub>3</sub> levels elevated (Control Level Alarm)
- **Red Light** – SO<sub>2</sub> and NH<sub>3</sub> level high (Action Level Alarm)

Indoor stations (except the NH<sub>3</sub> bullet tank monitor in PO2) will have a similar three-light tower system with the same colors (one tower per station), but will also have an audible local alarm (buzzer) that will activate when the Action Level is reached.

**Weather Station**

One on-site weather station located on the PO1 building roof. The station sensors will continuously measure wind speed, wind direction, temperature and relative humidity. Real-time continuous data will be automatically saved as both 15-minute and 1-hour time-weighted averages.

**Data Acquisition and Communication**

At each of the 10 AQM stations and the weather station, real-time data will be automatically sent by digital or analog sensor output to a Campbell CR850 data logger where the data will be time-averaged and electronically stored. Instantaneous and time-averaged data from each station will be transmitted from the data logger at each station to a Campbell CR6 data logger and PC computer (Central Station) located in or near the site's main control room.